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EXAMINER	
MOORE, IAN N	

ART UNIT	PAPER NUMBER
2463	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/606,948	ZETTINGER ET AL.	
	Examiner	Art Unit	
	IAN N. MOORE	2463	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 January 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/2/2009 has been entered.

Response to Arguments

2. Applicant's arguments filed 12/2/2009 have been fully considered but they are not persuasive.

Regarding claims 1-23, the applicant argued that, "…Simons merely employs a fixed number of data paths (e.g. *eight links from port cards to the cross connect* and four links from the forwarding card to the switch fabric) to connect the port cards 554 and cross-connect cards 562 to the switch fabric in each quadrants. Simon does not teach or suggest employing a reduced number of links, "the reduced number of links being a function of minimum number of the links required to support an aggregate bandwidth forwarded to the second switch fabric..." in page 6-7.

In response to applicant's argument, the examiner respectfully disagrees with the argument.

First, examiner asserts the broadly claimed invention "a reduced number of links between the first switch fabrics and the second switch fabric" as Simon's "four links between cross connect cards and switch fabric card", and these assertions are clearly recited in the previous

action as well as in this instant action. Applicant is arguing the links between port cards to the cross connects as part of reduced number of links, and such assertion is not made by the examiner. Thus, the argument is irrelevant and clearly an error.

Second, examiner is confused on applicant argument based on Simon disclosing "fixed" number of data paths. Examiner sees no relevant facts on the argument of Simon's fixed number of data paths with regards to the broad claim "minim number of links". Thus, the argument is irrelevant and clearly an error.

In particular, Simon discloses allowing a reduced number of links between the first switch fabrics and the second switch fabric (see FIG. 35A-B, enables the lesser/reduce number of connections/links between cross connect cards 562, 564, 566, 568 and switching fabric cards 570 *(i.e. in quadrant 1, four (4) active lines (plus one redundant) between cross connect cards 562 and the switching fabric card 570, which is less/reduced number of links when connection via forwarding card 546*); see col. 45, line 35-69; see col. 49, line 10-60) relative to coupling the first switch fabrics directly to the second switch fabric (see FIG. 35A-B, relative to connecting cross connect cards directly to switching fabric card 570 (*i.e. in quadrant 1, if cross connect card 562 were connected directly to the switching fabric card 570, it would require eight (8) lines from (8) universal port cards 554a-h; however, since the connections are via forwarding card 546, it now only requires four (4) active lines (plus one redundant)*). Thus, it is clear that the uses of forwarding cards 546 enable/allow a less/reduced number of links; see col. 45, line 35-69; see col. 49, line 10-60); <u>the reduced number of links </u>(see FIG. 35A-B, lesser/reduce number of connections/links (*between cross connect cards 562, 564, 566, 568 and switching fabric cards 570*) (e.g. four (4) active lines for quadrant 1)) <u>being a function of a minimum number of links</u>

required to support an aggregate bandwidth (see FIG. 35A-B, are a minimum number of links are required for total/aggregate bandwidth OC-12 (622Mbps)/OC-48(2488Mbps); *note that minim four (4) serial lines are required for twelve (12) STS-1 time slots to support total/aggregate bandwidth of STS-12 (i.e. OC-12), at four (4) STS-1 time slots per link; or minimum four (4) serial lines are required, each serial line with twelve (12) STS-1 time slots to support total/aggregate bandwidth of STS-48 (i.e. OC-48)*) forward to the second switch fabric (see FIG. 35 A-B, transmit/forward to switching Fabric Card 570; see col. 46, line 30-65; see col. 47, line 1-10, 15-32; see col. 48, line 12-54).

In response to applicant's argument on "allowing a reduce number of links", the broadly claimed invention recites "*the coupling via the respective switch interface modules allowing a reduced number of links between the first switch fabrics and the second switch fabrics relative to coupling the first switch fabrics directly to the second switch fabric, the reduced number of links being a function of a minimum number of links required to support an aggregate bandwidth forward to the second switch fabric*".

(1) MPEP 2106 is referring to the hybrid claim where an apparatus including one more steps of functional limitation. "*Allowing a* ***reduce number of links***" and "*the reduce number of links being a function of a minimum number of links required*" is conclusive statement based on intended used of the claim, and it is not a functional limitation. As long as the respective interface modules are coupled between first and second fabric, it would result in less/reduced number of links in between. As long as the reduce number of links are used, these links are minimum number of links required, otherwise there is no reason to reduce the number of links to a point that there is no link to transmit the data. In other word, if there only two device there is a

conventional one-to-one types of links; however, if there is an intermediate device inserting between two devices, clearly one-to-one types of links can be reduced to a minimum since the intermediate device enables/allows to connect with less/reduce/minimum links than before.

Thus, it is clear that this specific recitation is nothing more than conclusive statement associated with intended use of the claimed invention.

Even applicant specification (in US 20040085895 A1) supports these facts as follows:

[0039] Switch interface modules (discussed later in reference to FIG. 10) may also be employed in the distributed switch fabric 317 between the protection switch fabric 325 and the central switch fabric 320. The switch interface modules **allow** for configuration **connections** between the distributed switch fabrics 325 and the central switch fabric 320, **which can reduce the central switch fabric 320 complexity**.

[0048] Also shown in FIG. 4 is a local switch path 420 in which the protection switch fabric 325-M is used to perform local switching. The local switching occurs through the working port 410a-1 in the associated protection group 405-M, passes through the associated protection switch fabric 325-M, and continues through another working port 410a-n. The protection switch fabric 325-M performs local switching, which off-loads switching requirements from the central switch fabric 320. This off-loading **may result** in **a reduction of** the size and complexity of the central switch fabric 320.

In view of the above, it is clear that the usage of "may result in reduction" and "can reduce" in the specification clearly shows that the "reduction number of links" intended use or conclusive statement. Since one can clearly see that , if there is an intermediate device inserting between two devices, clearly one-to-one types of links can be reduced since the intermediate device enables/allows to connect with less links than before.

(2) Even if "*Allowing a **reduce number of links***" and *the reduce number of links being a function of a minimum number of links required*" were considered as "functional limitation", the combined system of Simons and Ishiwatari still discloses these limitation as set forth above. These broad limitations do not define a patentable distinct invention over that in the combined system of Simons and Ishiwatari since both the invention as a whole and the combined system of

Simons and Ishiwatari are directed to "inserting the intermediate device to enable/allow less number of links/connections". Thus *"Allowing a **reduce/minimum number of links**"* is clearly routine experimentation and optimization in the absence of criticality since connection it is based on commonly accepted well established teaching in art (*since one can clearly see that, if there is an intermediate device inserting between two devices, clearly one-to-one types of links can be reduced since the intermediate device enables/allows to connect with less links than before).*

Regarding claims 1-23, the applicant argued that, "...Ishiwatari does not teach or suggested *the coupling via the respective switch interface modules allowing a reduced number of links between the first switch fabrics and the second switch fabrics relative to coupling the first switch fabrics directly to the second switch fabric*...Such a system would <u>not</u> have any notion of employing a reduced number of links between the first switch fabrics and the second switch fabrics relative to coupling the first switch fabrics directly to the second switch fabric. In fact, such a hypothetical system would required substantial modification, effectively altering its principle of operation, to behave in a manner defined by applicants claims...even if the hypothetical system could be modified, the modification would only be done in hindsight of applicant disclosure and claim...." in page 7-8.

In response to applicant's argument, the examiner respectfully disagrees with the argument.

Ishiwatari is not required to teach the argued limitation since these limitations have already been disclosed by Simon, and the rejection is based on the combined system. One cannot show nonobviousness by attacking references individually where the rejections are based on

combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In response to applicant argument on "substantial modification", as set forth above Primary prior art reference Simon has already disclosed the argued limitations, and Ishiwatari is not used to combine this limitation. Since Simon has already disclosed the argued limitations, there is "no substantial modification" and "no principle of operation to alter" required in either Simon or Ishiwatari. Clearly, there is nothing to alter or modify since the argued limitation is clearly disclosed by Simon.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In this case, regarding the argued limitation, examiner is not using Ishiwatari to modify Simon. Thus, the argument is irrelevant.

Regarding claims 9 and 20, the applicant argued that, "… hypothetical system would not include coupling between the first and second switch fabrics is configured...." in page 8.

In response to applicant's argument, the examiner respectfully disagrees with the argument. Simons discloses the coupling between the first and second switch fabrics is configurable (see FIG. 9, 35A-B, a combined system of user computer work station 62 which include NMS 60 and a processor 542 configures the connection between cards in the network

device (i.e. configuration/provision between line cards (in quadrants) and switch fabrics; see col. 14, line 1 to col. 18, line 65).

Regarding claims 8 and 19, the applicant argued that, "... neither one of these references disclosed performing facility protection switching "within the predetermined time span"...." in page 9.

In response to applicant's argument, the examiner respectfully disagrees with the argument.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In this case, Simons discloses the first switch fabrics perform facility protection switching in response to multiple simultaneous failures in the network (see col. 49, line 6-26; see col. 45, line 55 to col. 46, line 12; cross connects in quadrants perform facility/line protection switching (APS, Automatic Protection Switching (APS), 1+1, 1:1, 1:N) upon failures simultaneously/parallel). However, a switch performing a facility protection switching within predetermined time of 50 ms or less is well known in the art as disclosed by industry standard GR-253-CORE (see attached) so that subscribers on the failed facility would not be affected due to a failure. In particular, Taniguchi teaches the switch fabrics perform facility protection switching within a predetermined time span in response to multiple simultaneous failures in the network (see col. 1, line 52-58; col. 7, line 10-15; switch fabric performing APS switching at no more than 50 ms due to a plurality of failures in the network).

Thus, the combined system of Simons and Ishiwatari discloses the broadly claimed invention.

Regarding claims 10 and 21, the applicant argued that, "... neither one of these references disclosed a content processor coupled to and between the first and second switch fabric to convert the signals from a first protocol to a second protocol"...." in page 9.

In response to applicant's argument, the examiner respectfully disagrees with the argument.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In this case, Simons discloses switching plurality of protocols between cross connect cards in quadrants 1-4 and switching fabrics 570 (see FIG. 35A-B, see col. 49, line 45 to col. 50, line 67). Li teaches a content processor (see FIG. 2, switching circuit 70 or 71) coupled to and between the first (see FIG. 2, ATM/IP switch fabric 66) and second switch fabric (see FIG. 2, TDM switch fabric 62) to convert the signals from a first protocol (see FIG. 2, ATM/IP protocol) to a second protocol (see FIG. 2, TDM/PCM protocol); see page 2-3, paragraph 22-25.

Thus, the combined system of Simons and Ishiwatari discloses the broadly claimed invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-7, 9, 11, 12-18, 20, 22 and 23 rejected under 35 U.S.C. 103(a) as being unpatentable over Simons (US006332198B1) in view of Ishiwatari (US 6,201,788).

Regarding Claims 1 and 23, Simons discloses an apparatus (see FIG. 35A-B, a network device 540) for switching signals (see col. 46, line 33-40; packets, frames, or cells) in a network (see FIG. 35, SONET, ATM, or MPLS network; see col. 45, line 20-33; see col. 46, line 16-27), comprising:

multiple first switch fabrics (see FIG. 35A-B, cross connect cards 562, 564, 566, 568 in Switching Quadrants 1-4) to perform facility protection switching at a subrate of the signals (see FIG. 36a-b; see col. 45, line 60-67; see col. 49, line 8-25; each cross connect card performs lines/facility redundancy/protection switching schemes (i.e. Automatic Protection Switching (APS), 1+1, 1:1, 1:N) at serialized payload time slot(s) electrical STS-1 path rate (i.e. line rate 51.84 Mpbs or payload rate 50.112 Mpbs) or STS-3c path rate (i.e. line rate 155.52 Mpbs or payload rate 150.336 Mpbs) on the packets/frames/cells; note that low speed channelized electrical path rate is a subrate/smaller rate than high speed multiplexed optical SONET rate; see col. 46, line 5 to col. 47, line 32; see col. 48, line 10-25; see col. 49, line 10-15) relative to the signals received by the multiple first switch fabrics (see FIG. 35 A-B, subrate/smaller STS-1 rate (i.e. line rate 51.84 Mbps or payload rate 50.112 Mbps) or subrate/smaller STS-3c path rate (i.e.

line rate 155.52 Mbps or payload rate 150.336 Mbps) is relative/comparative to high speed multiplexed SONET signals at the ports of cross connects; see col. 46, line 15-30, 60-65; see col. 48, line 32-54);

a second switch fabric (see FIG. 35A-B, switching Fabric Card 570) coupled to the first switch fabrics (see FIG. 35A-B, connecting with cross connect cards 562, 564, 566, 568) via respective switch interface modules (see FIG. 35A-B, via corresponding/respective forwarding cards 546, 548, 550, 552) to switch a subset of the signals (see FIG. 35A-B, switching separated/divided/detached packets/cells/frames received from quadrants 1-4) in a non-facility protection switching manner among the first switch fabrics (see col. 45, line 40 to col. 46, line 30; see col. 47, line 53 to col. 48, line 11; see col. 50, line 60-67; switching fabric card does not perform lines/facility redundancy/protection switching schemes with/between the quadrants), the coupling via the respective switch interface modules (see FIG. 35A-B, by connecting using forwarding cards 546, 548, 550, 552) allowing a reduced number of links between the first switch fabrics and the second switch fabric (see FIG. 35A-B, enables the lesser/reduce number of connections/links between cross connect cards 562, 564, 566, 568 and switching fabric cards 570 *(i.e. in quadrant 1, four (4) active lines (plus one redundant) between cross connect cards 562 and the switching fabric card 570, which is less/reduced number of links when connection via forwarding card 546*); see col. 45, line 35-69; see col. 49, line 10-60) relative to coupling the first switch fabrics directly to the second switch fabric (see FIG. 35A-B, relative to connecting cross connect cards directly to switching fabric card 570 (*i.e. in quadrant 1, if cross connect card 562 were connected directly to the switching fabric card 570, it would require eight (8) lines from (8) universal port cards 554a-h; however, since the connections are via forwarding card*

546, it now only requires four (4) active lines (plus one redundant)). Thus, it is clear that the uses of forwarding cards 546 enable/allow a less/reduced number of links; see col. 45, line 35-69; see col. 49, line 10-60);

the reduced number of links (see FIG. 35A-B, lesser/reduce number of connections/links (*between cross connect cards 562, 564, 566, 568 and switching fabric cards 570*) (e.g. four (4) active lines for quadrant 1)) being a function of a minimum number of links required to support an aggregate bandwidth (see FIG. 35A-B, are a minimum number of links are required for total/aggregate bandwidth OC-12 (622Mbps)/OC-48(2488Mbps); *note that minim four (4) serial lines are required for twelve (12) STS-1 time slots to support total/aggregate bandwidth of STS-12 (i.e. OC-12), at four (4) STS-1 time slots per link; or minimum four (4) serial lines are required, each serial line with twelve (12) STS-1 time slots to support total/aggregate bandwidth of STS-48 (i.e. OC-48)*) forward to the second switch fabric (see FIG. 35 A-B, transmit/forward to switching Fabric Card 570; see col. 46, line 30-65; see col. 47, line 1-10, 15-32; see col. 48, line 12-54).

Although Simons discloses "a subrate of the signals relative to the signals are received by the multiple first switch fabrics" as set forth above,

Simons does not explicitly disclose relative to "*a rate at which*" the signals are received.

However, Ishiwatari teaches multiple first switch fabrics (see FIG. 9A-B, 10, transmission devices 10 A-D; see FIG. 10, 20; see col. 6, line 40-56) to perform facility protection switching at a subrate of the signals (see FIG. 10, performing STS-1 facility protection switching between working signal processing part 23, UT(1-W)- (4-W), and protection signal processing part 33 UT (1-P)-(4-P) at individual STS-1 channel subrate (e.g. each STS-1 channel

1 to 24); note that each Demux 22 signal rate (e.g. STS-1 rate with **line rate 51.84 Mbps))** is less than multiplexed signal OC-N) relative to a rate at which the signals are received by the multiple first switch fabrics_(see FIG. 10, relative to multiplexed Optical OC-N signal rate (e.g. OC-48 (2488 Mbps), OC-192 (9953 Mbps)) at which OC-N signal are received by multiple transmission devices; see col. 7, line 13-65; see col. 8, line 1-69).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide *"a rate at which"* as taught by Ishiwatari in the system of Simons, so that it would enable coexistence between different transmission methods or protocols which provide flexible and expansible system; see Ishiwatari col. 5, line 1-5.

Regarding Claim 12, Simons discloses a method (see FIG. 35A-B, devices 540 processing the method steps) for switching signals (see col. 46, line 33-40; packets, frames, or cells) in a network (see FIG. 35, SONET, ATM, or MPLS network; see col. 45, line 20-33; see col. 46, line 16-27), comprising:

performing facility protection switching at a subrate of the signals by multiple first switch fabrics (see FIG. 36a-b; see col. 45, line 60-67; see col. 49, line 8-25; each cross connect cards 562, 564, 566, 568 in Switching Quadrants 1-4 performs lines/facility redundancy/protection switching schemes (i.e. Automatic Protection Switching (APS), 1+1, 1:1, 1:N) at serialized payload time slot(s) electrical STS-1 path rate (i.e. line rate 51.84 Mpbs or payload rate 50.112 Mpbs) or STS-3c path rate (i.e. line rate 155.52 Mpbs or payload rate 150.336 Mpbs) on the packets/frames/cells; note that low speed channelized electrical path rate is a subrate/smaller rate than high speed multiplexed optical SONET rate; see col. 46, line 5 to col. 47, line 32; see col. 48, line 10-25; see col. 49, line 10-15) relative to the signals received by

the multiple first switch fabrics (see FIG. 35 A-B, subrate/smaller STS-1 rate (i.e. line rate 51.84 Mbps or payload rate 50.112 Mbps) or subrate/smaller STS-3c path rate (i.e. line rate 155.52 Mbps or payload rate 150.336 Mbps) is relative/comparative to high speed multiplexed SONET signals at the ports of cross connects; see col. 46, line 15-30, 60-65; see col. 48, line 32-54);

performing facility protection switching at multiple switch interface modules (see FIG. 35A-B, facility protection switching at forwarding cards and redundant forwarding cards 546a-e, 550a-e, 548a-e and 552a-e; see col. 45, line 35-69; see col. 49, line 10-60);

switching a subset of the signals (see FIG. 35A-B, FIG. 35A-B, switching Fabric Card 570 switching separated/divided/detached packets/cells/frames received from cross connects quadrants 1-4) in a non-facility protection switching manner among the first switch fabrics by a second switch fabric (see col. 45, line 40 to col. 46, line 30; see col. 47, line 53 to col. 48, line 11; see col. 50, line 60-67; switching fabric card does not perform lines/facility redundancy/protection switching schemes with/between the quadrants);

<u>to allow a reduced number of links between the multiple first switch fabrics and the second switch fabric</u> (see FIG. 35A-B, enables the lesser/reduce number of connections/links between cross connect cards 562, 564, 566, 568 and switching fabric cards 570 *(i.e. in quadrant 1, four (4) active lines (plus one redundant) between cross connect cards 562 and the switching fabric card 570, which is less/reduced number of links when connection via forwarding card 546*); see col. 45, line 35-69; see col. 49, line 10-60) <u>relative to coupling the first switch fabrics directly to the second switch fabric</u> (see FIG. 35A-B, relative to connecting cross connect cards directly to switching fabric card 570 (*i.e. in quadrant 1, if cross connect card 562 were connected directly to the switching fabric card 570, it would require eight (8) lines from (8)*

universal port cards 554a-h; however, since the connections are via forwarding card 546, it now only requires four (4) active lines (plus one redundant)). Thus, it is clear that the uses of forwarding cards 546 enable/allow a less/reduced number of links; see col. 45, line 35-69; see col. 49, line 10-60);

the reduced number of links (see FIG. 35A-B, lesser/reduce number of connections/links (*between cross connect cards 562, 564, 566, 568 and switching fabric cards 570*) (e.g. four (4) active lines for quadrant 1)) being a function of a minimum number of links required to support an aggregate bandwidth (see FIG. 35A-B, are a minimum number of links are required for total/aggregate bandwidth OC-12 (622Mbps)/OC-48(2488Mbps); *note that minim four (4) serial lines are required for twelve (12) STS-1 time slots to support total/aggregate bandwidth of STS-12 (i.e. OC-12), at four (4) STS-1 time slots per link; or minimum four (4) serial lines are required, each serial line with twelve (12) STS-1 time slots to support total/aggregate bandwidth of STS-48 (i.e. OC-48)*) forward to the second switch fabric (see FIG. 35 A-B, transmit/forward to switching Fabric Card 570; see col. 46, line 30-65; see col. 47, line 1-10, 15-32; see col. 48, line 12-54).

Although Simons discloses "a subrate of the signals relative to the signals are received by the multiple first switch fabrics" as set forth above,

Simons does not explicitly disclose relative to "*a rate at which*" the signals are received.

However, Ishiwatari teaches multiple first switch fabrics (see FIG. 9A-B, 10, transmission devices 10 A-D; see FIG. 10, 20; see col. 6, line 40-56) to perform facility protection switching at a subrate of the signals (see FIG. 10, performing STS-1 facility protection switching between working signal processing part 23, UT(1-W)- (4-W), and protection signal

processing part 33 UT (1-P)-(4-P) at individual STS-1 channel subrate (e.g. each STS-1 channel # 1 to 24); note that each Demux 22 signal rate (e.g. STS-1 rate with **line rate 51.84 Mbps))** is less than multiplexed signal OC-N) relative to a rate at which the signals are received by the multiple first switch fabrics (see FIG. 10, relative to multiplexed Optical OC-N signal rate (e.g. OC-48 (2488 Mbps), OC-192 (9953 Mbps)) at which OC-N signal are received by multiple transmission devices; see col. 7, line 13-65; see col. 8, line 1-69).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide "*a rate at which*" as taught by Ishiwatari in the system of Simons, so that it would enable coexistence between different transmission methods or protocols which provide flexible and expansible system; see Ishiwatari col. 5, line 1-5.

Regarding Claim 2 and 13, Simons discloses wherein the first and second switch fabrics are coupled to a single point of control (see FIG. 35A, Processor 542 connects with cross connect cards 562, 564, 566, 568 in quadrants 1-4 and switching fabric card 570; see col. 45, line 34, line 1-55).

Regarding Claim 3 and 14, Simons discloses wherein the first switch fabrics include less configuration than the second switch fabric (see FIG. 35 A-B, cross connect cards 562, 564, 566, 568 each quadrant 1-4 processes each received packet/frame/cell "locally" with less/small configuration. However, switching fabric card processes each receiving packet/frame/cell from the pluralities of quadrants "globally" with more/large configuration. Thus, it is clear that each cross connect cards 562, 564, 566, 568 has less/small configuration than the switching fabric card; see col. 45, line 34 to col. 46, line 15; see col. 50, line 60-67).

Regarding Claim 4 and 15, Simons discloses wherein the first switch fabrics include less granularity than the second switch fabric (see FIG. 35 A-B, cross connect cards 562, 564, 566, 568 in quadrant 1-4 processes each received packet/frame/cell "locally" with less/few granular/minute switching. However, switching fabric card processes each receiving packet/frame/cell from the pluralities of quadrants "globally" with more/large granular/minute switching. Thus, it is clear that cross connect cards 562, 564, 566, 568 has less/few granular/minute switching than the switching fabric card; see col. 45, line 34 to col. 46, line 15; see col. 50, line 60-67).

Regarding Claim 5 and 16, Simons discloses wherein the first switch fabrics also perform local switching with the multiple first switch fabrics (see FIG. 35A-B, cross connect cards 562, 564, 566, 568 in the quadrant 1-4 performs "local" switching from universal port card 554 to forwarding card 546; or performs "local" switching from one cross-connection card 562 in one quadrant to another cross-connection card in another quadrant; see col. 49, line 26 to col. 50, line 64).

Regarding Claim 6, Simons discloses redundant first (see FIG. 35A-B, cross connect cards 562b, 564b, 566b, 568b are redundant; see col. 49, line 8-67) <u>or</u> second switch fabrics (see FIG. 35A-B, redundant switching fabric card 570b; see col. 45, line 35-55; see col. 50, line 60-67).

Regarding Claim 7 and 18, Simons discloses wherein the first or second switch fabrics support Time Division Multiplexing (TDM) switching (see col. 46, line 15-30; switching TDM stream) <u>or</u> fixed-length switching (see col. 46 line 15-30; see col. 47, line 14 to col. 48, line 25; ATM cells (i.e. each ATM cell has fixed length 53 bytes).

Regarding Claim 9, Simons discloses the coupling between the first and second switch fabrics is configurable (see FIG. 9, 35A-B, a combined system of user computer work station 62 which include NMS 60 and a processor 542 configures the connection between cards in the network device (i.e. configuration/provision between line cards (in quadrants) and switch fabrics; see col. 14, line 1 to col. 18, line 65).

Regarding Claim 17, Simons discloses redundant facility protection switching (see FIG. 35A-B, cross connect card in quadrant 2 is redundant of cross connect card in quadrant 1 for facility/line protection switching since the cross-connect card 562 are connected; see col. 49, line 8-67) and redundant non-facility protection switching (see FIG. 35A-B, redundant switching fabric card 570b; see col. 45, line 35-55; see col. 50, line 60-67).

Regarding Claim 20, Simons discloses adjustably configuring coupling between the multiple first switch fabrics and the second switch fabric (see FIG. 9, 35A-B, a combined system of user computer work station 62 which include NMS 60 and a processor 542 changes/adjusts configuration between the line cards (in quadrants) and switch fabrics; see col. 23, line 46 to col. 25, line 15).

Regarding Claim 11 and 22, Simons discloses wherein the facility protection switching includes Linear Automatic Protection Switching (LAPS) and 1:n protection switching (see col. 45, line 60-67; see col. 49, line 8-25; performs lines/facility redundancy/protection switching schemes (i.e. Automatic Protection Switching (APS), 1+1, 1:1, 1:N) on the packets/frames/cells).

Simons does not explicitly disclose "Unidirectional Path Switched Ring (UPSR) protection switching and Bidirectional Line Switched Ring (BLSR) protection switching".

However, UPSR and BLSR protection switching are well known in the art disclosed by standards such as GR-1230-CORE (for BLSR) and GR-1400-CORE (for UPSR) (see www.telcordia.com) so that a network device can interoperate with other network devices using the standard protection switching protocols. In particular, Ishiwatari discloses Unidirectional Path Switched Ring (UPSR) protection switching and Bidirectional Line Switched Ring (BLSR) protection switching (see col. 7, line 12-25; see col. 9, line 64 to col. 10, line 5).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide "Unidirectional Path Switched Ring (UPSR) protection switching and Bidirectional Line Switched Ring (BLSR) protection switching", as taught by Ishiwatari in the system of Simons, so that it would provide enable coexistence between different transmission methods or protocols which provide flexible and expansible system; see Ishiwatari col. 5, line 1-5.

4. Claim 8 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simons and Ishiwatari in view of Taniguchi (US006456587B2).

Regarding Claim 8 and 19, Simons discloses the first switch fabrics perform facility protection switching in response to multiple simultaneous failures in the network (see col. 49, line 6-26; see col. 45, line 55 to col. 46, line 12; cross connects in quadrants perform facility/line protection switching (APS, Automatic Protection Switching (APS), 1+1, 1:1, 1:N) upon failures simultaneously/parallel).

Neither Simons nor Ishiwatari not explicitly disclose "within a predetermined time span".

However, a switch performing a facility protection switching within predetermined time of 50 ms or less is well known in the art as disclosed by industry standard GR-253-CORE (see attached) so that subscribers on the failed facility would not be affected due to a failure. In particular, Taniguchi teaches the switch fabrics perform facility protection switching within a predetermined time span in response to multiple simultaneous failures in the network (see col. 1, line 52-58; col. 7, line 10-15; switch fabric performing APS switching at no more than 50 ms due to a plurality of failures in the network).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide "within a predetermined time span", as taught by Taniguchi in the combined system of Simons and Ishiwatari, so that it would provide switching at a very high speed and at very fast time after detection of failure; see Taniguchi col. 1, line 50-60.

5. Claim 10 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simons and Ishiwatari, and further in view of Li (US 20040213205A1).

Regarding Claim 10 and 21, Simons discloses switching plurality of protocols between cross connect cards in quadrants 1-4 and switching fabrics 570 (see FIG. 35A-B, see col. 49, line 45 to col. 50, line 67).

Neither Simons nor Ishiwatari explicitly disclose "*a content processor coupled to and between the first and second switch fabric to convert the signals from a first protocol to a second protocol*".

In particular, Li teaches a content processor (see FIG. 2, switching circuit 70 or 71) coupled to and between the first (see FIG. 2, ATM/IP switch fabric 66) and second switch fabric

(see FIG. 2, TDM switch fabric 62) to convert the signals from a first protocol (see FIG. 2, ATM/IP protocol) to a second protocol (see FIG. 2, TDM/PCM protocol); see page 2-3, paragraph 22-25.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide "*a content processor coupled to and between the first and second switch fabric to convert the signals from a first protocol to a second protocol*" as taught by Li in the combined system of Simons and Ishiwatari, so that it would provide very good economics in scale to high port density; see Li page 5, paragraph 35.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to IAN N. MOORE whose telephone number is (571)272-3085. The examiner can normally be reached on 7:30 AM- 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Derrick W. Ferris can be reached on 571-272-3123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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